Smart Specialisation for Regional Innovation: Dissemination Report for Research Study of Tampere, Finland

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Introduction

This report summarises a research study of innovation policy in Tampere, Finland conducted by members of Newcastle University's Centre for Urban and Regional Development Studies (CURDS). It is based on one of 16 'living laboratory' reports on regions across Europe that formed part of the EU Seventh Framework Programme project *Regional Innovation for Smart Specialisation (SmartSpec)*. As this suggests, the recent development of a Research and Innovation Strategy for Smart Specialisation (RIS3) in Tampere region (Pirkanmaa)* is at the heart of the report. More broadly, however, this RIS3 framework is studied as part of an ongoing development of the innovation system and policy of the region and situated within its wider economic, governance and institutional context.

The concern in the report with smart specialisation *practices* is wider in focus than just the development of a smart specialisation *strategy*: as will be illustrated throughout, in Tampere this European policy dynamic has intersected with national and local developments affecting the region (e.g. the introduction of the INKA programme, structural changes in the economy) that have largely superseded the formal requirements of RIS3 in importance. Innovation thinking in the region has also evolved to a stage where, in the phrase of one interviewee, they prioritise activities that are 'smart' but no longer necessarily 'specialised', leaving them on some points at odds with the principles promoted through the formal RIS3 guidance.

The report draws on analysis of policy documents, academic literature, and 12 interviews with key actors in the region carried out during two fieldwork visits in May 2014 and May 2015. Interim and final project reports were produced in October 2014 and October 2015 respectively. This dissemination report is an edited version of the final project report in which the contents have been organised into a simpler structure of 7 main sections. As such the material predominantly refers to the situation up to late 2015, and where ongoing developments relating to innovation policy (e.g. the winding down of the INKA programme) are touched upon, other potentially significant policy changes following the national parliamentary election of April 2015 (e.g. proposals for a major reform of social welfare and health care) are not covered. The concluding section provides a summary of the key points in the report.

***** The object of this report is Pirkanmaa, which is a NUTS 3 level region in the south-west of Finland. This is centred on Tampere, the third largest city in Finland, so that it is also known (in English) as the Tampere region. Pirkanmaa is with four other NUTs 3 regions - Central Finland (Keski-Suomi), Ostrobothnia (Pohjanmaa), Southern Ostrobothnia (Etelä-Pohjanmaa), and Satakunta – a part of the larger NUTS 2 level region of Länsi-Suomi (Western Finland). A complementary profile of the innovation landscape for this Länsi-Suomi region is available from the EU Regional Innovation Monitor (Lahtinen, 2014), but as this report recognises, the NUTS 2 region is (following the abolition of provincial authorities in Finland in 2009) now mainly meaningful as a statistical unit: the relevant regional level of governance here is Pirkanmaa.

1. Governance System

Finland is widely recognised as having built one of the leading national innovation system policies in the world during the 1990s and 2000s (OECD, 2005). These science and innovation policies have developed through what Sotarauta and Kautonen (2007) have described as a 'co-evolutionary' dynamic between strong central government departments or agencies and local institutional actors (municipalities, Regional Councils, universities, business) predominately in the main cities. Therefore any summary of regional innovation policy, in what (in population terms) is a relatively small country, needs to be situated initially in this wider territorial context.

Within Central Government, the Ministry of Employment and Economy (formed through a merger of separate ministries for Labour and Trade/Industry in 2008) is now responsible for Innovation and Technology Policy, and (transferred from the Ministry of the Interior) also Regional Development[1]. Science and Education Policy (covering research and teaching by universities and universities of applied science) is, however, the responsibility of the Ministry of Education and Culture. The new Ministry of Employment and Economy inherited a number of long-running state agencies that are key national innovation actors in Finland – Tekes, the Finnish Funding Agency for Technology and Innovation; the VTT Technical Research Centre of Finland; and SITRA, the Finnish Innovation Fund (jointly operated with the Ministry of Finance and the Ministry of Education and Culture). The main offices of these agencies are based in the Helsinki region, but there are branches of the VTT in Tampere and other

[1] See http://www.tem.fi/en/ministry.

relatively large cities outside the capital. The agencies of the Ministry of Education and Employment also include 15 ELY Centres throughout Finland (established 2010), with one covering Pirkanmaa in Tampere, that carry out government activities relating to Economic Development, Transport, and the Environment in their regions. This includes delivering national innovation policy and services, and the ELY centres house regional offices of Tekes[2].

Below the national scale, the other level of elected government in Finland are the local municipalities. At the start of 2014 there were a total of 320 municipalities in Finland[3], which means that, outside of the larger cities, they are typically small entities in population terms. Despite this, however, they represent a very strong form of local government with high levels of autonomy in their delivery of core public services including education, primary and specialised healthcare, and social services, and their powers to raise their own revenues (Blöchliger and Vammalle, 2012, p.85). These municipalities are grouped together into 18 regions (at NUTS 3 level), which are constituted through statutory joint municipal authorities, known as Regional Councils, with responsibility for regional development and land use planning[4]. They are also administer the region's EU Structural Fund (ERDF and ESF) programmes, although these are also coordinated with the NUTS 2 level programmes (Lindqvist *et al.* 2013, p.23). This means that Regional Councils are important strategic actors in the sub-national governance of innovation in Finland (for instance relating to RIS3), but this role is performed through close coordination with the municipalities that are their main

[2] See http://ec.europa.eu/enterprise/policies/innovation/policy/regional-innovation/monitor/organisation/l%C3%A4nsi-suomi/centre-economic-development-transport-and-environment-pirkanmaa.
[3] http://www.localfinland.fi/en/Pages/default.aspx
[4] http://www.localfinland.fi/en/authorities/regional-councils/Pages/default.aspx

funders and elect the members of their governing Regional Assemblies. The close interpersonal networks that exist between members of the Regional Council of Tampere, the City of Tampere municipality, and other relevant local actors was acknowledged by interviewees as having been an important coordinating mechanism in the governance of the city-region – as one described it, the region had become used to operating as a network rather than a structure.

The Pirkanmaa Regional Council area consists of 22 municipalities, of which the City of Tampere is by far the largest with 220,446 of the 500,166 total population[5]. This municipality plus the seven surrounding municipalities (Nokia, Ylöjärvi, Kangasala, Lempäälä, Pirkkala, Orivesi, Vesilahti) form a recognised metropolitan Tampere sub-region with a combined population of 369,525. This sub-region has a single Tampere Regional Economic Development Agency (TREDEA), of which the City of Tampere is the majority owner (60%), but in which the other seven municipalities also have a stake. TREDEA acts as the marketing, investment, and tourism agency for this sub-region, supplies business development services, and manages the Open Tampere and main parts of the INKA programmes. Outside of this core metropolitan area, the other 14 municipalities in Pirkanmaa are predominately rural, and not in general the focus of regional innovation activities. Firms in these areas may still however be supported by the Regional Council and the ELY Centre for Pirkanmaa (partly through the European Rural Development Funds).

[5] All population figures here are for 2014 and obtained from Statistics Finland - http://www.stat.fi/til/vaerak/tau_en.html

2. History of Regional Innovation Policy

The contemporary period of regional innovation policy in Finland has a widely recognised starting point in the Regional Development Act of 1994, at which time the country was recovering from a very severe recession of the early 1990s and the challenge to its existing economic model that this represented. This marked the beginnings of a change in regional policy thinking from the received approach based predominately on “investment-driven growth” and top-down policy measures such as subsidies, to an “innovation-driven development” paradigm aimed at mobilising local actors to leverage indigenous assets for endogenous growth (OECD, 2005, p.68). This can, in the typology outlined by Nauwelaers and Wintjes (2003), be understood as a clear shift to a ‘system-oriented’ rather than ‘firm targeted’ approach, and modes of innovation support favouring ‘behavioural value-added’ rather than ‘input resources’. The related academic policy concepts of clusters and innovation systems are seen to have been particularly influential in Finland, and although applied in a fairly loose form, have informed the characteristic focus of the subsequent policy on the concentration of specialised sectoral and technology capabilities in certain hubs, and on the building of collaborative relationships between public, private and university actors (Sotarauta, 2012).

The principle vehicle for this regional innovation policy for twenty years was the Centres of Expertise (OSKE) programme, which went through three phases before ending in 2013 to be replaced by the Innovative Cities (INKA) programme. The initial phase of the Centre of Expertise programme (1994-1998) focused on just the eight

largest urban regions (including Tampere) where the greatest critical mass of resources (e.g. universities) to support innovation-based growth were located. Hence, as a tool for regional policy, this programme arguably prioritised the competiveness of these centres over efforts to promote more balanced development through focusing on peripheral and rural regions (OECD, 2005). In both subsequent phases, however the programme expanded to cover more cities, so that by the third phase 2007-2013 there were 21 Centres of Expertise, and a greater concern with promoting networking between them (Ottaviano *et al.*, 2009). A parallel Regional Centre programme supporting smaller cities was also launched in 2001, which was even more geographically comprehensive with 34 cities in total (OECD, 2005; Hedin *et al.*, 2008).

The Centres of Expertise received some limited funding from Central Government, but the relevant city/region centres were expected to supply match funding and, more generally, stimulate activity by mobilising local actors (e.g. firms, universities, etc.) and particularly encourage cooperation between them (OECD, 2005). Following the cluster specialisation logic mentioned above, cities qualifying as Centres of Expertise were required to select sectors or technology fields on which to concentrate (subject to approval by national Ministry in charge of the programme). In Tampere the fields of expertise chosen were initially Mechanical Engineering and Automation, Information and Communications Technology, and Health Technology, with Media Services added as a fourth in the second phase of the programme (1999-2006) (Kostiainen and Sotarauta, 2003). For the third phase, responsibility for the Centre of Expertise was moved into the new Ministry of Employment and Economy, and a greater emphasis was placed on aligning the programme with national innovation policy. This meant more top-down coordination in terms of structuring the programme around 13

'Competence Clusters' which brought together multiple geographical Centres of Expertise with a single coordinating city designated for each theme (Ottaviano *et al.*, 2009). The involvement of Tampere in these various Competence Clusters are summarised in table 2.1. The two Competence Clusters for which Tampere was coordinating city represented modifications of their previous field of expertise: Intelligent Machines focused on "machines and machine systems, in which the added value brought by information technology, electronics, software and communications is notable"; while Ubiquitous Computing supported the "development, commercialisation and capitalisation of embedded intelligence in human-centred, distributed, mobile and constructed environments".

Table 2.1 - 2007-2013 Competence Clusters in Tampere

Competence Cluster	*Coordinating Cities*	*Other Centres of Expertise*
Digibusiness	Helsinki	Hämeenlinna, **Tampere**, Kouvola
Energy Technology	Vaasa	Joensuu, Jyväskylä, Pori, **Tampere**
HealthBio	Turku	Kuopio, Oulu, Helsinki, **Tampere**
Health and Wellbeing	Kuopio, Oulu	Helsinki, **Tampere**
Intelligent Machines	**Tampere**	Hyvinkää, Hämeenlinna, Lappeenranta, Seinäjoki
Nanotechnology	Jyväskylä, Helsinki	Joensuu, Kokkola, Mikkeli, Oulu, **Tampere**
Ubiquitous Computing	Oulu, **Tampere**	Jyväskylä, Pori, Helsinki

Source: Ottaviano *et al.*, 2009, p.215.

The INKA programme introduced in 2014 displays some points of continuity with the third phase of the Centres for Expertise programme in terms of national coordination (although it is now managed by the technology agency TEKES on behalf of the Ministry of Employment and Economy) and its organisation around networked themes. However, it also involves some substantial changes. For instance, the number of themes and cities involved were reduced from the 13 Competence Clusters and 21 Centres of Expertise of its predecessor programme: five relatively large cities (outside

the Helsinki metropolitan area) were granted the status of leading INKA themes approved by the Ministry of Employment and Economy, with seven other cities also included in the programme amongst the partners for the different themes (see table 2.2). The themes, while covering some familiar broad areas (e.g. health, energy), are intended to embody a new approach in the innovation policy. According to the description on the INKA website: “Demand-driven, solution-centred and multisectoral themes that combine several competence areas were selected for the programme from among proposals submitted by the urban regions. This procedure is different from the traditional technology or sector oriented approach”. Tampere is the only city that is leading two distinct themes (Smart Cities and Renewing Industry), and is also a partner in the Future Healthcare theme. These INKA themes, and the process through which they were designated to Tampere, are central to the form that the de facto smart specialisation strategy has taken in the region, and therefore these will be analysed through the rest of the report. The impact of the more recent decision by the national government to discontinue the INKA programme after 2017 will be discussed in section 5.

Table 2.2 – Innovative Cities (INKA) programme (2014-2017) themes

INKA Theme(s)	**Lead City**	**Partner City**
Bioeconomy	Joensuu	Jyväskylä, Seinäjoki
Sustainable Energy Solutions	Vaasa	Lappeenranta, Pori
Future Healthcare	Oulu	Kuopio, Helsinki Metropolitan area, **Tampere** and Turku
Smart Cities Renewing Industry	**Tampere**	Lahti, Oulu, Helsinki Metropolitan area, Turku
Cyber Security	Jyväskylä	

Source: https://www.tekes.fi/en/programmes-and-services/tekes-programmes/innovative-cities/

3. Regional Innovation System

The Tampere region (Pirkanmaa) within Western Finland has a well-developed ecology of organisational actors from which the regional innovation system is formed. As described in the preceding section, the identity and coherence of this system has been supported by the strong national and local innovation policy since the mid-1990s that, despite modifications in programme content and nomenclature, has had a fairly clear and sustained focus on a few areas in Tampere: predominately mechanical engineering and automation, information and communication technologies, and health and biotechnology. Out of these three sectors, the first two have had a significant private sector presence in the region. For the mechanical engineering area, which in its present day form has developed out of the traditional industrial specialisation of the region (see Martinez-Vela and Viljamaa, 2007), the large firms are concentrated in the field of machine manufacturing and include branches of a number of large multinational corporations as well as companies that are headquartered in Finland. The most significant single private sector actor in the regional innovation system has, however, been Nokia in the Information and Communication Technologies area. This global telecommunications corporation is named after the town in Pirkanmaa where its nineteenth century origins lie (as a wood pulp and rubber producer). After diversifying into mobile telecommunications, Nokia became a key part of the Finnish national innovation system in the 1990s; both contributing a significant share of national GDP growth and exports, and in return receiving significant public support for R&D and labour force development from the state through its technology agency Tekes and universities (see Ali-Yrkkö and Hermans, 2004). Nokia is now

headquartered in Espoo in the Helsinki metropolitan region, but as well as having global operations in a number of countries, has had R&D centres and manufacturing sites throughout other parts of Finland. This includes a large Research Centre in Tampere (on the Science Park) that was the biggest private sector employer in the region (with approximately 3,700 employees in 2005) (OECD, 2005), and acted very much as an anchor firm for the development of the wider ICT cluster. The recent downsizing of Nokia's activity in Tampere will be discussed in the next section.

The two universities in Tampere (both re-locating to the city from Helsinki during the 1960s) are well integrated parts of the local innovation system and have been credited as being vital to the long-term transition of the region from its traditional heavy industry base to a knowledge-based economy (see Kostiainen and Sotarauta, 2003). These two universities are quite different but complementary institutions, and have growing levels of collaboration in some areas. The University of Tampere, the largest of the two institutions, covers a wide range of subjects from the humanities and social sciences (including management), but also contains capabilities in Information Science, and a School of Medicine (Sotarauta, *forthcoming*). Tampere University of Technology is a more specialist institution that mainly focuses on engineering related disciplines, and therefore, industry engagement is core to its mission. As well as being an important partner to companies throughout Finland and internationally, in Tampere it has traditionally had very strong links with Nokia around R&D and supplying graduate employees. Its local embeddedness is strengthened by its co-location to the Tampere Science Park and majority ownership stake in the Hermia Group. More recently Tampere University of Technology has also adopted four cross-institution research themes to encourage interdisciplinary work: these are in areas - including

digital operating environment, energy- and eco-efficiency, and health technology[6] - that connect directly to wider strategic innovation priorities in the region.

In 2011 the two universities (supported by strategic funding from the Regional Council) formed BioMediTech, a joint life sciences and medical technology institute that combines expertise from both institutions (including Biomedical Engineering from Tampere University of Technology). BioMediTech is based at the Tampere University Hospital site along with the University of Tampere Medical School and the FinnMedi Oy research and technology centre for the life sciences sector (established 1995) that is owned by a combination of the Pirkanmaa Hospital District, City of Tampere, the two universities, and the Finnish Red Cross[7]. Although this institute does aim to encourage innovation and commercialisation of research, the various partners recognise the challenges of realising this on a significant scale in the short term, due to the lack of existing life science related companies in the region, and industry-wide issues in this domain related to financing and proof of concept (especially in one of the institute's specialist fields of Regenerative Medicine). This regional initiative, therefore, represents an investment in the long-term fundamental as well as applied research capacity of region in this area, with the purpose of consolidating the different clinical, life science, and technological research capabilities in the two universities, and therefore assembling the critical mass to ensure that Tampere is maintained as a recognised leader in this field against the background of a move for academic research funding in Finland to be concentrated in a fewer number of centres. The University of Tampere currently coordinates the Academy of Finland designated Centre of

[6] http://www.tut.fi/en/research/thematic-research-areas/index.htm
[7] See http://www.finnmedi.com/in-english/.

Excellence in Research on Mitochondria, Metabolism, and Disease, which forms part of the BioMediTech institute.

The strength of teaching in the two universities, and its inter-connection with research, was also emphasised as important by interviewees. A feature of the Finnish higher education system more generally over the previous two decades has been large-scale investment in expansion to meet the new labour market needs of the knowledge economy, focusing particularly on increasing numbers of graduates in information technology, media, and engineering areas (Schienstock, 2004). This demand is also met by the Tampere University of Applied Science, which is a polytechnic institution (with branches in the city and three other municipalities in Pirkanmaa) that provides vocational-based teaching (and some limited research and R&D support) in areas including technology, business, culture, and health and social welfare. The complementary nature of the three higher education institutions is reflected in ongoing discussions around their merger (the 'Tampere3 project') that is planned to be completed during the next five years[8]. Close collaboration between the institutions has already been taking place through the joint participation of their students with the Demola innovation platform that is described in the next section.

In addition to the universities, the other key long-term presence as an innovation actor in Tampere is Hermia. This originated in 1986 as a science park and technology centre next to the Tampere University of Technology campus in the Herventa suburb, which became the home for many technology companies - including the Nokia research

[8] http://www.uta.fi/english/introduction/tampere3/index.html.

institute (Kostiainen and Sotarauta, 2003). Hermia, like science park and technology centre organisations in other Finnish cities, also played a key role in managing the OSKE programme in Tampere. Following the takeover of the running of the science park site by the national Technopolis group, the Hermia group continues (now predominately owned by the Tampere University of Technology) as a provider of innovation services with two arms: Tamlink Ltd. is a technology transfer agency that was founded in conjunction with the science park in 1986; and New Factory is, in the terminology adopted in the region, an open innovation environment that is physically based in the original industrial district of central Tampere (Finlayson) and is home to several innovation support programmes (or 'platforms') which will be outlined below. Outside of the university sector, the VTT Technical Research Centre of Finland branch in Tampere, while very much part of a national organisation, is also seen as part of the research and business environment of the region by policymakers.

4. Transition to 'Platform-Based' Innovation Approach

As outlined above, the innovation system in the Tampere region has previously been structured through a focus on a few core cluster areas; principally mechanical engineering and ICTs. Other sectors of the economy - notably knowledge-intensive business services - by contrast remain relatively underdeveloped. During the previous five years or so, however, there have been significant structural developments that have challenged these established pillars and made clear that the innovation system in the region requires some significant renewal. The large companies that predominately constitute the machine building specialisation of the region remain important and the maintaining their future competitiveness is a key aim of the INKA Renewing Industry theme and related initiatives in the region. This sector, however, which represents the present-day legacy of the regions traditional heavy industry base, has experienced challenging conditions related to lower demand and competitive pressures in the wake of the economic downturn of 2008, leading to falling investment and employment in the sector (Lahtinen, 2014, p.10). The most significant single structural change in the region's activity, however, has been the decline of Nokia as the anchor firm for the local ICT cluster. This downsizing, which has also affected other locations in Finland, has been driven by Nokia losing international market-share to new smartphone producers such as Apple and Samsung. By 2014 this had forced the corporation to reduce its global workforce by 76,000 from a level of 125,000 in 2008[9]. In Tampere the major wave of redundancies occurred in 2011: this meant that in 2013 Nokia employment in Tampere had fallen to around 1,100 from a peak of around 4,000

[9] http://www.businessweek.com/articles/2014-08-07/nokia-decline-finlands-tech-workers-face-bleak-job-market.

ten years earlier[10]. However, it was subsequently announced that, following the acquisition of Nokia by Microsoft in 2014, the Research Centre based in Tampere would remain open[11]. The danger of local overdependence on Nokia in the occurrence of a change in their operations had, according to interviewees, been anticipated several years in advance through, for instance, a regional foresight exercise into the future of the ICT sector. This prior awareness allowed the regional/local authorities to react fairly quickly to the announcement of job losses, leading to the launch in 2012 of a new project – Tampere New Deal 2015, which was described as "a preventative partnership concept (region, state, universities, TEKES, EU and private) to face the acute and forceful structural change situation" focusing particularly (but not exclusively) on the ICT sector[12]. Locally, this partnership incorporated Nokia Bridge, a national programme supported by the corporation to help its former employees find new jobs or form start-up enterprises, which has helped generate new activity in the cluster to partly replace that lost with the reduction of Nokia. The continuing challenge of this structural change within Nokia can however be seen by it being chosen as the subject for a Smart Europe (funded by INTERREG IVC through ERDF) peer review exercise in Tampere (see section 6).

This structural change has also had a more general impact by way of informing new innovation policy thinking in the region, particularly in encouraging a move away from the previous cluster-based emphasis on sectoral specialisation towards a focus on cross-cutting platforms that support more open innovation processes. Latterly this approach dovetailed with the prescribed non-sectoral basis of themes for the national

[10] http://tampereallbrightmagazine.fi/news/tampere-featured-in-fdi-magazine-life-after-nokia.
[11] http://www.ft.com/cms/s/0/0db372f6-0dce-11e4-85ab-00144feabdc0.html#axzz3B7xGcmuH
[12] http://www.slideshare.net/TR3S_PROJECT/tampere-new-1factory

INKA programme, but it has been promoted by regional/local authorities prior to this through activities centred on the New Factory site and particularly its flagship Demola initiative (see Raunio *et al.*, 2013). Demola is an innovation platform for projects in which students from different higher education institutions work together with a private, public or third sector organisation on a real-life problem or goal provided by that partner. The idea for Demola (which started operating in 2008) actually originated not from the universities, but from individuals in the Nokia Research centre and Hermia (the Technology Centre previously attached to the Science Park). Reflecting the Open Innovation R&D strategy recently adopted by the Nokia Corporation, they recognised that innovation was increasingly taking place across the sector boundaries and established network relationships of the cluster structures that had been promoted through the regional policy of the time, and wanted to engage universities and particularly students in this more fluent collaboration and co-creation process. All three of the higher education institutions in Tampere (the two universities and University of Applied Science) were involved in the project from the start. This means that, unlike more orthodox examples of student enterprise projects with businesses, one of the features of the Demola model is that projects normally involve multi-disciplinary teams drawn from these different institutions working on the case in question. Another novel feature of Demola is that the student teams are given ownership of the intellectual property rights for the demo that they create, with the company (or other) partners given an option to license back the rights at the end of the project if there is commercial potential. This means that students can gain monetary rewards, as well as industry experience and credit towards their degree courses. Demola is also a source of potential new start-up companies, and more generally has been found to increase the entrepreneurial outlook and knowledge of the student participants. Since its inception

Demola has grown significantly, and now involves local partners from industrial sectors beyond ICT (although most projects still have some kind of digital component or application), as well as from government or public sector organisations including the City of Tampere and Regional Council.

The Demola programme itself has also become an important network and brand for the region, through expanding to a number of other cities and regions throughout the Baltic Sea region and other parts of Europe. As of 2015 Demola operates through affiliates in Oulu in Finland, Vilnius in Lithuania, Latvia (based in Riga), South and East Sweden (based in Lund/Malmö and Norrköping respectively), Budapest in Hungary, Slovenia (based in Maribor), the Basque Country, and following even wider geographical expansion in the last year, new locations in Saint Petersburg in Russia, The Canary Islands, and Guadalajara in Mexico[13]. Interviewees in Tampere stressed that this spread of Demola was not just about exporting a model, but creating international relationships with these other cities or regions and generating opportunities for the exchange of knowledge and policy (see section 7). Although the possibilities of this network were still being explored, policymakers hoped that it could be a platform through which smaller companies in Tampere could be involved in projects that give them access to new international markets, as well as a way of attracting talented students from other countries (also see the TREDEA supported 'Talent Tampere' network).

This success led to the establishment in 2009 of Protomo, a "Demola for grown-ups", that provided support for entrepreneurs to develop ideas or prototypes more quickly

[13] See http://www.demola.net/about.

than a typical business incubator through a collaborative approach[14]. Protomo subsequently expanded to a number of other cities in Finland. Around 2010 the New Factory centre was set up to support these platforms in Tampere and provide a physical space for their community of participants to congregate. As of 2015 New Factory no longer runs Protomo in Tampere, but has replaced it with a new Startup programme that focuses on the development of fledgling enterprises through community-based activities over a three-month process. The New Factory has also in the past run other innovation platforms for user-led testing of new products and processes (Suuntaamo) and for the support of new enterprises to grow (Accelerator) (Raunio *et al.*, 2013, p.26). However, these projects were only financed for set periods of time. As well as New Factory, other innovation spaces in Tampere host innovation platform activities, such as Demola projects, including the area around the Tampere University of Technology campus and Hermia centre in Herventa, and a business and academic media hub called Mediapolis.

In summary, Tampere can be characterised as an old industrial city/region that has in the past been notably successful in developing more knowledge-based economic activities. This is reflected, for instance, in the Länsi-Suomi (NUTS2) region (that Tampere (Pirkanmaa) forms part of) having been ranked into the highest Innovation Leader group in successive editions of the Regional Innovation Scoreboard exercise (Hollanders *et al.*, 2014). The innovation system has, however, arguably been over-dependent on certain large firms in the areas of ICT and machine building, and in recent years this deficiency has been exposed by ongoing concerns about the competitive positions of many of these firms. The current juncture is, therefore,

[14] http://www.sitra.fi/en/artikkelit/funding/petri-rasanen-idea-thriving-business-without-lengthy-incubation.

interesting in whether the region can be successful in once again adapting to a significant structural change in the economy. A basis for optimism exists in that the key anchor institutions that have helped to make adaptive capacity a strength of the regional economy in the past (e.g. the universities, Hermia, and now on a smaller scale Nokia) remain well embedded in the innovation system, and have started to make a transition to supporting a new more entrepreneurial-focused and open mode of innovation through the platform approach.

5. Changes in Governance/Institutional Arrangements

The complex multi-level governance system outlined in section 1 is shaping smart specialisation practices in the Pirkanmaa/Tampere region in fundamental ways. The Regional Council, as the main agency that administers local implementation of EU Structural Fund programmes, is formally responsible for the RIS3**.** However, as the next section will explain, smart specialisation in the Tampere region is not taking the form of a separate strategy but is being articulated as part of a wider regional strategy and developed through other local policy initiatives. Notwithstanding the subsequent decision that it would cease operating in 2017, probably the most important of these initiatives has been the national INKA (Innovative Cities) programme, which in its planning phase exhibited some features of an 'entrepreneurial search and discovery process'. This section will cover this as a smart specialisation process by proxy and discuss institutional issues that have raised by the accompanying shift in governance.

5.1 – Changes in governance relations

The key national and regional governance actors involved in the Tampere INKA project are basically the same as in the Centre of Expertise (OSKE) period that preceded it for almost twenty years, but the new programme has involved some significant changes in allocation of lead responsibility amongst these agencies. At a national level, the Ministry of Employment and Economy assigned TEKES, the Finnish Funding Agency for Technology and Innovation, responsibility for managing INKA (see below). At a regional level, the national programme deepens the 'hub' logic of previous Finnish territorial innovation policy by being targeted specifically at larger city-regions

(outside the Helsinki metropolitan area) as opposed to wider regions. So where activities under the OSKE programme were guided by a regional level strategy programme prepared by the Regional Council (in cooperation with local municipalities, universities and firms), in the INKA programme the City of Tampere has been granted more direct control by the Ministry of Employment and Economy. The Regional Council for Pirkanmaa, while still actively involved in giving form to the INKA project (see below), has as a consequence been largely bypassed in terms of formal responsibility for its governance. This institutional shift towards the metropolitan scale has been mirrored in other developments in the Finnish governance system. For instance, in 2012/2013 a series of 'growth agreements' were set up between the Ministry of Employment and the Economy and large city-regions (Lindqvist *et al.*, 2013). Another parallel programme is the Six City Strategy - Open and Smart Services (6Aika); a joint initiative between the six largest municipalities in Finland (Helsinki, Tampere, Oulu, Turku, and also in the wider Helsinki Metropolitan region, Espoo and Vantaa) as part of the Finnish implementation of EU Cohesion Policy for 2014-2020. This programme builds on previous Smart City projects in Finland, and has three 'priority axes' in the areas of open innovation environments, open data and interfaces, and open participation and customership[15].

The INKA programme itself only officially began operating in 2014, but the process through which the shape and thematic foci of the programme has been determined took place through dialogue between central government and the city regions over a period of at least two years. The basic structure of this process was defined by the

[15] See http://6aika.fi/in-english/.

standard kind of tendering procedure followed in Finland for deciding the participation of localities in national programmes. This involved the submission of a proposal by the cities and then, following evaluation by an expert group, further negotiation with the central government to refine the contents and role of the different cities in the programme. At the local level in Tampere, the process for selecting which themes they wanted to concentrate on was described to us by interviewees as a sometimes difficult and slow, but ultimately valuable exercise that tapped into the wider strategic discussions in the region about future economic policy stimulated by the structural changes described in the preceding section. This collaborative process was facilitated by the economic development agency TREDEA on behalf of the City of Tampere, but involved substantial input from various other local actors; including the Regional Council, the two universities (at a senior management level) and University of Applied Science, and a wide range of private sector representatives. It also built on existing patterns of what could be called local 'associational governance', through which a wider cadre than just local government actors help shape strategic ideas and directions in the region. These patterns were characterised by interviewees as working mainly through relatively informal and unstructured discussions, enabled by the tight interpersonal networks between key individuals from different local organisations noted in section 1. This in part reflects the relatively small size of Tampere, despite being the largest city in Finland outside the Helsinki metropolitan region. More generally, the strength of these networks, respondents also felt, helps to smooth over coordination challenges that arise from the complexity of the various governance structures and organisational actors across the regional and local municipality scales.

The outcome of this process and negotiation with the various Ministries of Central Government was also felt to be favourable to Tampere, with the city being nominated as lead for its chosen two themes (Renewing Industry and Smart Cities) and a partner in a third (Future Healthcare). The emerging thinking in Tampere around open innovation and platforms such as New Factory/Demola meant that the city was well placed to respond, and also possibly to influence, the intention of central government for the new INKA programme to move away from the previous sector-based cluster approach that characterised the Centre for Expertise programme. Hence, the Renewing Industry theme being led by Tampere does not just focus on a single sector (although the continuing competitiveness of the mechanical engineering industry is a prominent concern), but will aim to support industry in any area with significant market potential (particularly internationally) and also on addressing the recognised need to strengthen the connection between manufacturing and services. This, interviewees hoped, would help policy initiatives to reach beyond private companies in the core sectors served well in the OSKE programme period (e.g. ICT and machine building) and to connect with a wider population of firms (particularly SMEs) previously not engaged with the strategic innovation support provided in the region. This theme is coordinated in the region by TREDEA, who have existing contacts with companies through interfaces such as the Open Tampere business/enterprise support development programme. The Smart City theme will link new technologies to urban development, and through projects that involve a citizen-focused user-driven dimension, will aim to promote local service and social innovation as well as exploit potential market opportunities by developing exportable business or service models (Vallance, *forthcoming*). This theme will again be coordinated by TREDEA, but the key actor in driving it will be the City of Tampere and its surrounding municipalities. These

local government organisations have functions that relate to the main Smart City sub-themes in the city-region of smart traffic, housing and the built environment, and efficient resource use. The key aim of this strategy is to mobilise the resources that the City has in these areas to support wider innovation activities in these domains; for instance through use of innovative procurement (existing examples include initiatives in commissioning new electric buses and street lighting) and making municipal data openly available to companies and other actors (e.g. Demola student teams). Interviewees indicated to us that the priority in the Smart City theme, reflecting its sponsorship by the City of Tampere, is therefore as concerned with improving service delivery for local citizens (in a time of pressure on public expenditure) as it is with the more conventional economic development focused goals of innovation strategies. This INKA Smart City theme also clearly has potential synergies with the Open and Smart Services (6Aika) initiative mentioned above, not least because the partners in the INKA themes led by Tampere (including the Helsinki Metropolitan region) cover the six largest Finnish cities in question.

The other notable shift in governance between the OSKE and INKA programmes has been that overall responsibility for financing projects was transferred to Tekes, the national technology and innovation funding agency. This particular institutional change has been the source of a number of problems during the early stages of the INKA programme. Tekes is used to providing project-based financing for companies, universities, and other research organisations, but has not previously been responsible for an explicit regional development brief (unlike its parent Ministry of Economy and Employment). As such the place-based dimension of the INKA programme, which involves interaction with and coordination between a number of

cities, presents a novel set of challenges for this organisation. Interviewees during the first fieldwork stage for this study in May 2014 (only around six months after the official start of the INKA programme) expressed concerns that this would require some adaptation of their existing outlook and ways of working if Tekes were to effectively support projects with a territorial, as well as space-neutral 'excellence', justification in the future. During the second stage of fieldwork a year later, respondents pointed to some progress that had been made in working with Tekes in the intervening period, but still felt that there were barriers that had not been fully resolved. These were manifested in the continuing slowness of the process involved in local projects under the INKA programme being approved for financing. In particular, interviewees pointed to issues relating to the disjuncture between the main project-based funding instruments used by Tekes that were developed to support activities with a clear end product, and the strategy locally of investing in more open-ended ecosystem development initiatives**.** Despite the intention for the INKA programme to represent a renewed focus on activities driven by larger Finnish cities such as Tampere, therefore, there were suggestions that the reliance on Tekes has thus far actually led to a further centralisation of control of innovation strategy and made it harder to tailor interventions to specific regional needs.

Subsequent to this second round of fieldwork, and following the national election mentioned above, the new Government Programme included a significant reduction of the budget allocated to Tekes for the support of research, development and innovation[16], with the consequence that new funding for INKA projects would be discontinued from 2016 and the programme will close during 2017 (instead of running

[16] https://www.tekes.fi/en/whats-going-on/news-from-tekes/funding-cuts-to-affect-tekes/.

as planned until 2020)[17]. This budget reduction also, for instance, affected the Strategic Centres for Science, Technology and Innovation (SHOK) programme funded by Tekes. Inka projects were to be match funded from local sources, so while the termination of the programme represents the removal of a potentially important revenue stream supporting sub-national innovation activities, whether it will force a significant change of strategic priorities and objectives within Tampere remains to be seen. Subsequent informal correspondence with a previous interviewee indicates that the City of Tampere will plan to continue its activities in the area of Smart City through alternative development programmes, such as the 6Aika programme, and funding mechanism, such as innovative procurement.

The change in local governance from OSKE to INKA outlined above means that the Regional Council in Tampere lost a mainly technical role as local funding authority for this national programme, and with this, one channel of interacting closely with regional companies and other actors seeking to participate in these projects. Its function as main administrator for the European Structural Funds, however, means that it remains an important strategic innovation actor, and responsible for articulating the RIS3 (within the wider Regional Strategy). As the next section will detail, this strategy aligns with priorities developed through the INKA programme, reflecting the continuing overlap of regional and municipal interests in a mainly network form of governance (see section 1). The Regional Council has also in recent years aimed to take a more active role in innovation policy, coinciding with the appointment of a Director of Innovation and Foresight as a new position. This has, for instance, allowed the Regional Council to coordinate some more formalised collaborations between actors

[17] https://www.tekes.fi/en/whats-going-on/calls2015/Call-for-applications-INKA-Innovative-Cities/.

in the region. For instance, every year since 2013 it has been producing a detailed analysis of data on the innovation performance of the region (the Situational Picture of Innovation) which is shared with local stakeholders to raise awareness and encourage dialogue[18].

5.2 – Institutional fragmentation and reform

The recent structural and programmatic changes in Tampere discussed above have also created a suitable point in time to reflect on wider institutional arrangements for the delivery of innovation strategy and support in the region. National programmes in Finland are given set timeframes with the intention of preventing them from becoming permanent structures, but the three successive phases of the OSKE programme meant that this had constituted a stable period of innovation policy for a period of twenty years. On this basis, some interviewees felt that the structures associated with OSKE had lost their original impetus, and welcomed the transition to the INKA programme as much for the opportunity to restructure and refresh these established institutional relationships, as for any specific change in the strategic or policy content of the programme. As mentioned in the previous section, the economic development agency TREDEA, majority owned by the City of Tampere, has assumed the role as lead agency for the Smart Cities and Renewing Industry themes. This also means that the INKA programme, at least for the period in which it is still operating, can be coordinated with the City of Tampere's two other main innovation or economic development programmes, Open Tampere and the also recently established 6Aika,

[18] http://www.pirkanmaa.fi/en/innovation/situational-picture-innovation.

so that resources can efficiently deployed across these potentially synergistic initiatives.

This still, however, leaves some uncertainty over the future role of the various other innovation actors within the ecosystem. In the 2007-2013 phase of the OSKE programme, of the seven Competence Clusters that Tampere formed part of (section 2), Hermia Ltd was responsible for coordinating local operations relating to five of these themes (Digibusiness, Nanotechnology, Energy Technology, Intelligent Machines, and Ubiquitous Computing), while FinnMedi Oy was responsible for the other two (HealthBio (Biotechnology) and Healthcare Technology). Now the corresponding functions for INKA have been given to local government actors (i.e. TREDEA), but these two intermediary organisations continue to have distinct functions within the local innovation system. For instance, despite also no longer managing the property side of the science park, the Hermia organisation does now include New Factory which is central to the new innovation platform approach being followed in the region. More recently Hermia has helped set up new innovation centres/environments in the key strategic area of mechanical engineering, Konela, where it has substantial expertise built up over time, and strong links with the co-located Tampere University of Technology[19]. It also has a mainly administrative role in supporting another new innovation network, ITS Factory, in the area of intelligent transport systems[20]. This situation reflects a more general trend over the past twenty years or more in Finland for the large institutional actors (e.g. universities, municipalities and Regional Councils, etc.) to set-up and take an ownership stake in separate intermediary organisations of

[19] http://www.hermiagroup.fi/@Bin/1091988/konela_yleisesitys_2012_EN_tk.pdf
[20] http://www.hermiagroup.fi/its-factory/

different types to deliver sectoral-specific or more general innovation/economic development functions (Mittilä, 2006). However, where other locations in Finland have recently rationalised and consolidated their local intermediary organisations, a similar process has yet to occur in Tampere, meaning that a relatively large number of organisations have built up over time with successive cluster or other projects/programmes increasing the scope for institutional fragmentation (e.g. duplication, systemic coordination failures) to be present, as well as making the system hard to understand by local firms and other actors not closely engaged with the policy environment (Smart Europe, 2013).

However, while the intermediary organisations and related networks established by local organisations may be subject to review sometime in the future, some interviewees emphasised that this model of external delivery agencies would mean that any restructuring would likely be relatively unconnected to institutional reform in the large public organisations themselves. Challenges of institutional adaptation by these often large organisations to align with new strategic priorities and innovation practices in the region therefore represent a potential set of barriers to success. For instance, the Regional Council discussed the need to develop new processes to support the agile and collaborative forms of open innovation that they were now focused on helping to deliver. Barriers within the very strong Finnish social and healthcare system were mentioned as a major obstacle to the development of new innovations in the life science domain. However, the most important innovation capability challenge for a public sector organisation in the region, given its new role in driving the Smart City agenda, is that faced by the City of Tampere. The main barrier here, identified by several interviewees, will be embedding new practices such as

smart procurement throughout this organisation oriented to core service delivery, so that the potential it has in mobilising resources to support innovation within the wider city and region can be realised. At the moment there is strong vision from a small number of people in leadership and related (e.g. INKA Smart City theme coordinator) roles within this organisation, but it is acknowledged that the goal of encouraging the majority of its employees, habituated to more traditional ways of providing municipal services, to adjust to this vision will require a long-term process of institutional change.

6. S3 Strategy, Implementation and Assessment

The Pirkanmaa/Tampere region does not have a standalone Research and Innovation Strategy for Smart Specialisation (RIS3). Instead this is articulated in the research and innovation section of the new Regional Strategy, alongside other sections relating to social development and sustainability. This approach is common across Finland as instructed by the Ministry of Employment and the Economy. The strategy for Pirkanmaa, which was produced by the Regional Council, had at the time of our first round of fieldwork only recently been approved, and an English version of this strategy is not currently available. For illustration, however, a corresponding example of this document is however available in English for the Helsinki-Uusimaa region, which combines a regional strategic plan for 2040 and a regional development programme for the four year period 2014-2017[21]. This represents a fairly minimalist form of Smart Specialisation Strategy, which as well as possibly reflecting the relatively small organisational capacity of Regional Councils, clearly indicates some resistance in Finland to their innovation policy (perceived to have been amongst the most advanced in the world) conforming to a European wide standard template. For Tampere, in particular, there was the feeling that, in their new cross-sector innovation platform approach, they had moved beyond the specialisation logic of their previous cluster-based policies ('smart but not specialised'). Despite this, however, it was clear that the Tampere region had engaged with the new European smart specialisation agenda, reflecting an interest for the region to be plugged into and aligned with wider networks. For instance, Pirkanmaa (through the Regional Council) is registered on the S3

[21] See http://www.uudenmaanliitto.fi/files/13281/Helsinki-Uusimaa_Regional_Programme_A31-2014.pdf.

platform[22]. The region is participant in European networks or programmes (TR3S, Smart Europe, Vanguard Initiative) with an explicit smart specialisation element. Internally, the region held events for its stakeholders on the subject of smart specialisation[23]. Members of the Regional Council have also given presentations outlining the strategy to various audiences[24]. This section draws on these different sources to outline the strategy in Tampere.

In line with the innovation policy approach outlined above, the selected priority domains in the Tampere Region smart specialisation strategy are not narrow industrial sectors, but what people in the region have called 'growth ecosystems'. The four growth ecosystems identified here – smart mobility, smart housing & infrastructure, industry renewal, and advanced treatments and human spare parts – reflect existing strengths and focal points for strategic initiatives in the region[25]. In particular, they closely correspond with the INKA programme themes in which Tampere is either lead (Smart City and Renewing Industry) or partner city (Future Healthcare). The smart mobility ecosystem links into the Smart City INKA theme (along with smart housing and infrastructure), and relates to city expertise in transport and traffic systems and data. The advanced treatments and human spare parts ecosystem here refers to one of the specific research strengths of the BioMediTech Institute. These growth ecosystems are underpinned by key enabling technologies and scientific strengths identified in areas including computing, materials, signal processing, photonics, advanced manufacturing, and biomedicine. At the centre of the smart specialisation

[22] http://s3platform.jrc.ec.europa.eu/regions/fi197/tags/fi197
[23] http://smart-europe.eu/news/smart-caf%C3%A8-finland-smart-specialisation-tampere-region
[24] E.g. See http://www.errin.eu/sites/default/files/publication/media/ERRIN_08092014.pdf
[25] See http://www.pirkanmaa.fi/en/regional-development/smart-specialization-strategy

strategy, however, is the approach to what is described as 'talent generation & smart solutions', which here encompasses the 'innovation platforms and growth services' discussed at various points above, along with 'system trials and demonstrators', and 'global co-learning and investment' that all help to accelerate value creation[26]. From our interview the Regional Council emphasised that this was not about a formal top-down exercise of them identifying areas of focus in advance, but a more participatory and ongoing entrepreneurial discovery-based approach in which they wanted to "create environments and platforms for companies to be part of the strategy formation process everyday" [Interview with Regional Council, May 2014]. Accordingly, they said that they do not select projects to support with funding on the basis of priority sectors, but by following a three-fold criteria of: whether they add to the competitiveness of the region in the cross-cutting 'ecosystem' areas identified above; whether they contribute to the 'openness' of collaboration between different local organisations (including the universities); and whether they help enhance the efficiency of the public sector (e.g. healthcare and social services) in the region.

The Regional Council acknowledged that this intentionally 'chaotic' and entrepreneurial-driven flexible approach, in which they seek to intervene through relatively light-touch facilitation and orchestration of activities, presented some challenges to a traditional government role. The smart specialisation strategy does not rely on new policy instruments, but reflected the existing mix of innovation programmes and support in the region[27]. The various innovation platforms run through New Factory (i.e. Demola, Startup Programme, etc.), as well as other Hermia vehicles

[26] http://www.errin.eu/sites/default/files/publication/media/ERRIN_08092014.pdf.
[27] http://ec.europa.eu/enterprise/policies/innovation/policy/regional-innovation/monitor/news/landscape-regional-innovation-l%C3%A4nsi-suomi-finland.

such as Konela and ITS Factory, are clearly important to this strategy. New Factory is supported through the local business support programme Open Tampere run by TREDEA**.** The INKA programme, given the connection with the smart specialisation strategy, was intended to be a source of support for relevant innovation projects. However, this was not the sole financing stream for this activity, but would be supported by sources of local match funding, as well as other central government and EU Structural Fund schemes. Interviewees emphasised to us that they did not consider these programmes themselves as strategies, but tools to help implement overall strategic themes in the region.

Related to the governance challenges, this platform-based approach to innovation support can also create data issues in terms of clear metrics for monitoring. The Situational Picture of Innovation mentioned above includes a set of indicators related specifically to the innovation platforms, but these are relatively simple output measures from the process - e.g. number of projects, employees, new companies, and jobs created. Participants in the region recognised that they needed to continue to develop new metrics that could more sophisticatedly reflect the impacts that the platform approach has in terms of bringing different people and knowledge together, and could therefore also help to support the management of these platforms.

More generally, however, the region has entered into a couple of notable INTEERREG IVC projects - TR3S and Smart Europe - related to smart specialisation with a peer review and/or comparative policy learning element. Both of these projects are managed on behalf of the region by the Baltic Institute of Finland, a non-profit foundation based in Tampere that was established in 1994; initially to promote Finnish

participation in a new era of cooperation within the Baltic Sea region following the collapse of the Soviet Union, but now specialising in policy and funding instruments that involve interregional collaboration throughout Europe. TR3S (Towards Regional Specialisation for Smart Growth Spirit) is focused on the sharing of knowledge or experience about smart specialisation strategies between the 9 participant European regions, through activities such as study meetings and sharing of best practices[28]. Through this project Tampere hosted a meeting of the partners in which they presented key elements of their smart specialisation strategy in September 2014, and highlighted New Factory and the BioMediTech Institute as examples of local good practice. The main focus of the Smart Europe project was a series of peer reviews of the participating regions carried out by some of the 11 partners in the project, with the aim of exchanging knowledge about how their polices can be used particularly to help increase employment in innovation-based sectors. The week-long peer review exercise in Tampere, involving input from several of the Smart Europe regional partners, took place in 2013 and (as mentioned in section 4) concentrated on how structural change could be proactively managed in the region with a specific focus on the ICT sector in the wake of uncertainty about the future of Nokia[29]. The content of these two projects were described to us in the interviews as an opportunity to receive (a sometimes critical) external perspective on smart specialisation practices in Tampere and to reflect on the way this this aligns with and is communicated to regions within the rest of Europe. This was seen to be especially valuable given the very well developed, but arguably inward-focused tradition of innovation policy within Finland; that, while arguably putting Tampere ahead of most of its partner regions in the project,

[28] http://www.baltic.org/projects/tr3s
[29] For final report see http://www.smart-europe.eu/publications

means that it risks being out of step with practices and discourses in the rest of Europe, and therefore at a disadvantage when it comes to communicating their approach to access networks or potential sources of support at this level.

The European networking element of these projects is especially strong in another S3 related vehicle of which Tampere is a member with 16 other regions – the Vanguard Initiative for New Growth through Smart Specialisation. This joint initiative, with sponsorship from political leaders in each of the regions, is particularly concerned with supporting the development of new and emerging industries; for instance, an early scoping paper from the study focused on advanced manufacturing (Reid and Miedzinski, 2014). The Vanguard Initiatives includes some partners in common with the developing international network around Demola (Scania and the Basque Country), and also with the TR3S project (the Basque Country again and Scotland). The following section will discuss the wider implications of these emerging transnational partnerships.

7. Transnational Strategic Partnerships

A novel feature of the smart specialisation approach is that, in comparison to the emphasis of previous rounds of European innovation policy, it has proposed that cross-border and trans-regional cooperation are as important as internal regional connectivity in the development of effective innovation strategies (Uyarra *et al.*, 2014). As discussed above, Tampere can be said to have embraced this element of smart specialisation through participation in European INTEERREG IVC projects and other collaborative vehicles such as the Vanguard Initiative connected to the development of RIS3. This is representative of a longer-term concern for the region, as part of a small and relatively peripheral country, to be connected into European networks (reflected for instance in the presence of the Baltic Institute of Finland). Interviewees from the policy and university sectors emphasised the growing importance of this connectivity for (amongst other things) the opportunity to access sources of funding given the cuts in public expenditure that were projected to occur in Finland.

The strategic approach to these inter-regional links has, however, changed over the last few years in Tampere. Interviewees described to us an objective to move beyond temporary alliances with other regions around individual projects and build longer-term, thicker relationships with selected regions that could be the basis for the cross-border sharing of strategic approaches or frameworks in the future. These deeper partnerships, it was emphasised, would not be developed through activities defined in advance through formalised political agreements or declarations, but in line with the 'platform' thinking adopted within the region, be built bottom-up by facilitating a range of more practically-oriented collaborative activities between various actors in the

respective regions. This new approach has primarily been instigated by the Regional Council but is supported by the City of Tampere and other key local actors (e.g. universities).

The strongest current example of an effort to build this kind of partnership is with the Scania region in southern Sweden, for which the broad theme of Smart and Sustainable Cities (in which Scania like Tampere has a strategic interest) has been chosen as a focus for collaborative activities. In line with this theme, early activities have involved preliminary interactions at the City-to-City level (with both Malmö and Lund in Scania), but the partnership (building on earlier contacts) has been taken forward at the Regional level under the auspices of the Vanguard Initiative. In the document accompanying the Vanguard Initiative launch conference this Tampere and Scania partnership is described as being based on the:

> corresponding focus of their respective smart specialisation strategies … [and] joint commitment to promote new and emerging sectors of industry and industry-supporting services through open innovation. The aim is to co-operate and where interesting to co-ordinate present and future innovation activities within the area of smart cities and to align regional, national and European funding for joint work. … Sectors where co-operation will start include sustainable city development, ICT, logistics, media and heath and will be targeting horizontal innovation policy-development.
>
> (Vanguard Initiative, 2014, p.23).

This multi-faceted relationship will, however, operate through other overlapping channels outside of the Vanguard Initiative. Skåne region, like another Vanguard Initiative partner the Basque Country, is also in common with Tampere a Demola location. The Demola network connection was utilised through the running of a Smart City Accelerator across the cities of Tampere, Lund and Malmö in 2014. This supported numerous student Demola projects around cases supplied by companies recruited into the process as well as by the City municipalities, which related variously to the themes of smart mobility, citizen participation, and smart city ecosystem (focusing on use of open data). A stated aim of this programme was that successful ideas and solutions developed through these projects would be implemented in the real-life urban environments by the participating cities[30], but interviewees emphasised the less concrete outcomes from these exploratory projects of facilitating understanding amongst the public and private sector partners about where future collaboration could take place in the area of, for instance, innovative procurement. The shared programme was also intended to contribute to the development of links between the two regions based on their adoption of similar platform-based policy approaches. A larger Smart City Accelerator programme, involving other locations from the Demola network, is planned for 2016.

This example is illustrative of the strategic use of the Demola network as a tool for building inter-regional relationships. The intention amongst stakeholders in Tampere from the start was that the expansion of Demola from a local programme into an international network should be driven by wider benefits it could bring to the region,

[30] See the Demola Smart City Accelerator website - http://smartcityaccelerator.com/.

rather than simply exporting a successful model. Hence, the network, while centrally managed in Tampere, is jointly governed by all the partner locations, and new Demola nodes are supported through an initial phase of developing ecosystem capabilities that will ensure the programme will operate successfully in different places. The network, while having grown steadily in terms of number of partners (section 4), is still selective in terms of only expanding to locations where there is a mutual interest in this deeper form of collaboration, instead of aiming to grow by targeting specific cities or regions on the basis of their size, status, or geographical proximity to existing Demola centres. As illustrated by the Smart City Accelerator programme, the key feature of Demola as a sustainable innovation platform is its ongoing ability to quickly generate activities in the form of student projects, which can be targeted at the exploration of ideas in given areas of interest for the participating organisations (such as those that relate to innovation strategy priorities). The experience of public authorities, universities and companies working together in these projects was also felt to cultivate the trust between multiple actors in these regions from which deeper relationships could form. The potential value of this vehicle to the development of cross-border policy learning and coordination based on the kind of bottom-up approach being experimented with by Tampere should therefore be clear.

The broader effectiveness of this bottom-up approach in terms of facilitating international cooperation on a strategic level, however, largely remains to be seen. The partnership with Scania region and its cities, while clearly connected to innovation priorities in both locations through the Smart and Sustainable Cities theme, is still at an early stage of development, so that its effect on smart specialisation practices within Tampere have so far been limited. Some interviewees noted that, despite many

points of compatibility between the two regions, there were still barriers with implementing larger projects due to resource constraints and the challenge of coordinating activities across different (regional and city) levels between two territorial institutional systems. Outside of this bi-lateral partnership, however, the international network connections that Tampere have made as part of its response to smart specialisation are having an impact on policy formation. For instance, the focus on advanced manufacturing as part of the Vanguard initiative has influenced the Regional Council in Tampere to invest part of its ERDF funds in 3D printing technologies as an opportunity for cross-sectoral ecosystem development, which will draw on the expertise of other regional partners (e.g. Flanders) as part of this European network. Recently the Tampere and Scania regions have also collaborated in leading a Vanguard Initiative pilot on Nanotechnology[31], which aims to mobilise the local universities and help link them into more structured international networks.

[31] http://www.s3vanguardinitiative.eu/cooperations/vanguard-initiative-pilot-action-nanotechnology.

Summary and Conclusions

Finland has over the past twenty years developed a strong national and regional innovation policy, to which Tampere as a leading urban region has been central (section 2). This has meant that the formal process for developing a RIS3 introduced by the European Commission has not been viewed as an exercise that would add great value to current practices in the region. Instead the smart specialisation strategy is articulated as part of the new Regional Strategy (developed by the statutory joint municipal authority Regional Council), and is given form through other existing innovation programmes and policy instruments in the region (section 6). Amongst these initiatives, the INKA programme has been particularly important in strategic terms; even if unresolved problems in its early stages, and subsequent announcement that national funding support for it is to be cut, means that it is unlikely to prove to have a large impact in operational terms. The process through which the thematic focus of Tampere in the INKA programme was decided, involving ongoing discussion between regional stakeholders and negotiation with central government, can in this context be understood almost as a proxy for an 'entrepreneurial search and development process', shaped by the Finnish multi-level governance system (section 5). This led to a set of clear thematic priorities being identified for the region that reflect a good mix of objectives in terms of supporting the ongoing modernisation of the region's traditional strength in manufacturing and engineering (Renewing Industry), exploitation of new technologies within an urban environment as a source of opportunities for both business and societal innovation in service delivery (Smart City covering mobility, housing, and infrastructure), and investment in research capability in the health and life sciences area with future commercial possibilities (advanced

treatments and human spare parts) (section 6). These priorities exhibit some continuity with policy initiatives of the past (for instance the preceding third phase of the OSKE programme) and are supported through specific local centres or intermediary vehicles (e.g. Konela, ITS Factory, FinnMedi Oy, BioMediTech Institute).

Significantly, however, these thematic areas are defined in the strategy as 'growth ecosystems', rather than the pre-specified industrial or technological domains that are called for in the "more vertical, targeted and preferential intervention logic" through which activities are identified for the concentration of resources in smart specialisation (Foray, 2015, p.35). This corresponds with the more general shift in policy thinking in the region away from the previous cluster-based emphasis on sectoral specialisation towards a focus on cross-cutting open innovation processes, in an approach that has been pioneered through the New Factory environment and its constituent platforms such as Demola. Interestingly, this platform approach in Tampere is arguably closer to recent thinking about regional innovation policy (e.g. Asheim *et al.*, 2011) and indeed direct criticism of the smart specialisation concept (Cooke, 2012) in economic geography. This change in policy approach has developed in the context of a period of structural change in the economy, which has led to the previous high-level of dependency on Nokia and large machine building companies being questioned (section 4). This means that, despite the strong innovation performance of Western Finland (Länsi-Suomi), major economic challenges such as high structural unemployment are currently faced in the Tampere region. To what extent the more enterprise-focused innovation platform approaches are able to help address these challenges by supporting the creation of major new development paths is an interesting question for an industrial region that has in the past been characterised by

an unusually high level of adaptive capacity. The continuing active presence of key actors such as the universities and Hermia means that there is still the ‘thickness’ in the region’s institutional arrangements that can support this adaptability (section 4). However, prospective institutional barriers/bottlenecks have also been identified in the innovation system, in relation to possible fragmentation of delivery organisations/intermediaries and capability challenges with large public organisations such as universities, the health and social care system, and municipalities responding to new roles in supporting innovation. Some of these issues have become clearer with the recent transition to the INKA programme, and recognition of the related need for reform may prove to be a legacy of this now curtailed scheme (section 5).

While not prompting a significant change in the trajectory of innovation policy in the region, smart specialisation has been welcomed as an opportunity for Tampere to strengthen its European networks and engage in policy learning with other regions. This openness can be seen in the participation of Tampere in projects or networks with a smart specialisation theme, such as Smart Europe, TR3S, and the Vanguard Initiative (section 7). More generally it reflects a strategic objective to develop more sustained and multifaceted relationships with selected other European regions from which elements of policy coordination may follow.

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